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THIS MESSAGE HAS 29 PAGES INCLUDING THIS SHEETTO: Commissioner for PatentsFAX NO.: 571-273-8300FROM: Kin-Wah TongDATE: August 11, 2006MATTER: Serial No. 10/650,464 Filed: August 28, 2003DOCKET NO.: WHLK/043APPLICANT: KEENEY

The following has been received in the U.S. Patent and Trademark Office on the date of this facsimile:

☐ Petition  
☐ Disclosure Statement & PTO-1449  
☐ Priority Document  
☐ Drawings (☐ sheets) informal  
☒ Amended Appeal Brief  
☐ Petition for Extension of Time

☐ Transmittal Form  
☐ Fee Transmittal  
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PATENT  
Atty. Dkt. No. WHLK/043**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES****RECEIVED  
CENTRAL FAX CENTER****AUG 11 2006**In re Application of:  
Keeney, et al.

Serial No.: 10/650,464

Confirmation No.: 7110

Filed: August 28, 2003

For: METHOD AND APPARATUS  
FOR PROVIDING AN ASIC  
CONTROLLED ALARM UNIT

Group Art Unit: 2632

Examiner: Son M Tang

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Dear Sir:

**AMENDED APPEAL BRIEF**

Appellants submit this Amended Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2632 dated January 13, 2006, finally rejecting claims 1-16 and in response to the Notification of Non-Compliant Appeal Brief dated August 4, 2006. Specifically, the current Amended Appeal Brief only adds status of the claims to each claim listed on the claims Appendix of the Appeal Brief that was filed on July 17, 2006. No other changes were made to the Appeal Brief. Although Appellants believe no fee is required to file this Amended Appeal Brief, the Commissioner is authorized to charge any fees that may be required to make this Amended Appeal Brief timely and acceptable to the Patent Office, to Deposit Account No. 20-0782/WHLK/043.

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 2 of 28

### **REAL PARTY IN INTEREST**

The real party in interest is Cooper Wheelock, located in Long Branch, New Jersey.

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### **RELATED APPEALS AND INTERFERENCES**

The Appellants know of no related appeals or interferences that might directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

### **STATUS OF CLAIMS**

Claims 1-16 are pending in the application. Claims 1-17 were originally presented in the application. Claims 1-16 stand rejected in view of several references as discussed below. The rejection of claims 1-16 based on the cited references is appealed. The pending claims are shown in the attached Appendix.

### **STATUS OF AMENDMENTS**

Claim 17 was cancelled and claim 16 was amended in a Response to the Non-Final Office Action dated July 13, 2005, filed on October 13, 2005.

### **SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention provides for an alarm unit (100). In the embodiment of independent claim 1, the present invention comprises a flash circuit (170) having a flashtube for generating a flash. In addition, an application specific integrated circuit (ASIC) (110) is coupled to the flash circuit (170), for triggering the flash. In one embodiment of the present invention, the ASIC 110 functions as a controller and serves to control and regulate various functions (e.g., strobe control and/or audible control) of the alarm unit. For example, in one embodiment, the ASIC 110 serves to trigger the flash for the strobe when the ASIC receives a strobe sync pulse, or automatically every 975ms when operating under auto mode. In another example, the ASIC 110 may serve to control the audio circuit 150 for generating an audio warning, e.g., via a horn, buzzer and the like. The ASIC 110 can control and regulate various audible features such as

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 3 of 28

the frequency of the audio warning, e.g., to generate a Code 3 audio pattern. (See Figure 1, Appellants' specification, page 3, line 30 to page 5, line 28; page 16, lines 11-33.)

Namely, the ASIC circuit of the present invention performs all the necessary control functions to provide audible and visual signaling when used with external horn and strobe circuits. Several illustrative advantages of the ASIC-controlled alarm unit are disclosed below.

In one embodiment, the strobe circuit with the ASIC operates at a constant frequency, e.g., 16 kHz as compared to the micro/opto circuit which operates at approximately 7 kHz. The faster switching speed allows for the use of a smaller inductor, thereby allowing the strobe circuit to operate more quietly because any magnetostriction caused by the inductor is at the upper threshold of the human hearing response.

In one embodiment, the new ASIC circuit has a more advanced peak current limiting circuit. The micro/opto circuit limited the initial peak current only during the initial power-up stage. The new circuit continuously senses the input current level and will limit the current any time it rises above a set level. The clamp level is determined by the voltage level on a resistor which is sensed by the ASIC, and the level can be changed by changing the sense resistor. This is an actively controlled current-limiter compared to other current-limiting schemes that use a passive foldback-type configuration.

In one embodiment, the ASIC circuit has improved MOSFET driving capability built into it. For example, it can drive a MOSFET at ten volts with a faster on and off switching time (less than 400 nanoseconds), compared to the micro/opto circuit which drives the MOSFET at five volts and has a much slower switching speed (several microseconds). This improvement helps to reduce losses and makes the circuit efficiency better.

In one embodiment, the ASIC has two input pins which are used to set the candela setting for the strobe circuit. The pins are connected to a slide switch and can be a logic high (+5V) or a logic low (0V) depending on the switch position. Setting the candela sets an internal voltage reference level that is compared to the input on the

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 4 of 28

ISENSE input pin. The old circuit had the candela switch on the input side of the circuit and it switched the sense resistances directly. The input current flowed directly through the switch. In the new circuit the input current does not flow through the switch.

In one embodiment, the ASIC offers more precise control of the strobe circuit. The energy level of the strobe is controlled by the voltage level on the sense resistor that goes to the ISENSE pin on the chip. This level is laser-trimmed during the chip manufacturing process and is set within a much tighter tolerance limit compared to the micro/opto circuit. The micro/opto circuit relies on the tolerance of the forward voltage of the diode in the optocoupler and is less precise.

In the embodiment of independent claim 16, the present invention recites an alarm unit (100) comprising an audio circuit (150) for generating an audio warning signal. In addition, an application specific integrated circuit (ASIC) (110) is coupled to the audio circuit (150), for triggering said audio warning signal, wherein said ASIC (110) selects an audio frequency for said audio warning signal. (See Figure 1, Appellants' specification, page 3, line 30 to page 5, line 28; page 15, line 21 to page 16, line 9.)

#### **GROUND'S OF REJECTION TO BE REVIEWED ON APPEAL**

Claims 1, 4-5, 7-9 and 11-16 stand rejected under 35 U.S.C. §103(a) as being obvious over the Bechtel patent (U.S. Patent No. 5,896,092, hereinafter "Bechtel") in view of the Markwell, et al. patent (U.S. Patent No. 6,352,406, hereinafter "Markwell"). Claims 2-3 stand rejected under 35 U.S.C. §103(a) as being obvious over Bechtel in view of Markwell and in further view of the Preston patent (U.S. Patent No. 4,578,586, hereinafter "Preston"). Claim 6 stands rejected under 35 U.S.C. §103(a) as being obvious over Bechtel in view of Markwell and in further view of the Kataoka patent (U.S. Patent No. 4,625,151). Claim 10 stands rejected under 35 U.S.C. § 103(a) as being obvious over Bechtel in view of Markwell and in further view of the Hata patent (U.S. Patent No. 6,091,898).

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 5 of 28

### **ARGUMENT**

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AUG 11 2006

**A. 35 U.S.C. §103(a) – Bechtel in view of Markwell**

**1. Claim 1**

The Examiner has rejected claim 1 under 35 U.S.C. § 103 as being obvious over Bechtel in view of Markwell. Appellants respectfully traverse the rejection.

Bechtel teaches an alarm system for use in attracting the attention of hearing impaired persons and/or attracting the attention of persons in high decibel areas. (See Bechtel, Abstract.)

Markwell teaches a battery-powered RF-interconnected sensor system. (See Markwell, Abstract.) Specifically, Markwell teaches a wireless detector that is capable of communicating with other wireless detectors using RF communication. (See *Id.*) The detector may comprise an LED 51 that is controlled by a controlling means 35. (See Markwell, col. 4, ll. 30-33.) However, Markwell does not teach or suggest a flash circuit having a flashtube for generating a flash, where the trigger of the flashtube is controlled by the controlling means.

The Board's attention is directed to the fact that Bechtel and Markwell (alone or in any permissible combination) fail to teach or suggest an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube as positively claimed by Appellants in independent claim 1, which recites:

1. An alarm unit, comprising:  
a flash circuit having a flashtube for generating a flash; and  
an application specific integrated circuit (ASIC) coupled to said flash circuit, for triggering said flash. (Emphasis Added.)

In one embodiment, the Appellants' invention teaches that an ASIC may be utilized in an alarm unit. Utilizing ASIC has several exemplary advantages over prior alarm units such as allowing the strobe circuit having a flashtube to operate more quietly, being an actively controlled current-limiter, and greater efficiency. (See Appellants' specification, page 1, line 29 to page 3, line 2.)

In contrast, Bechtel fails to teach, show or suggest an alarm unit that utilizes ASIC. Nowhere does Bechtel specify that the integrated circuitry is an ASIC. The Examiner concedes that Bechtel does not teach using an ASIC, as taught by the

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 6 of 28

Appellants' independent claim 1, in the Final Office action dated January 13, 2006.

(See Final Office Action, para. 2.)

However, the Examiner then alleges that the significant gap left by Bechtel is bridged by the teachings of Markwell. The Examiner asserts that Markwell teaches using an ASIC for triggering the flashing pattern indication alarm 51. The Appellants respectfully submit that the Examiner has interpreted Markwell too broadly. Markwell's indication alarm 51 is only limited to an LED and not a flashtube, as positively recited by the Appellants in independent claim 1. Appellants' claim scope is not so broad that it encompasses an LED.

Appellants respectfully request the Board to note that a flashtube and an LED is not interchangeable, especially in the context of the alarm unit as taught by Bechtel and the battery operated detector unit as taught by Markwell. In fact, the electrical characteristics and the operational constraints of a flashtube and LED are significantly different. The high voltage that is needed to trigger a flashtube does not exist for an LED. As such, the deployment of an alarm unit having a flashtube is very different than an alarm unit having an LED.

To illustrate, the use of an ASIC allows the strobe circuit to operate at a higher frequency, thereby providing a faster switching speed which, in turn, allows for the use of a smaller inductor. The smaller inductor will allow the strobe circuit to operate more quietly because any magnetostriction caused by the inductor will likely be at an upper threshold of the human hearing response. This is only one example of why Appellants' invention provides an advantage in the field of alarm units that employ a flashtube. (See e.g., Appellants' specification, page 2.)

In light of the technological differences between a flashtube and an LED, Bechtel teaches away from Markwell because Bechtel discloses an alarm unit using a flashtube, whereas Markwell teaches a battery powered detector unit using an LED. As stated above, a flashtube is not interchangeable with an LED, especially in the context of the alarm unit taught by Bechtel and the battery operated detector unit taught by Markwell. Significant engineering is required to deploy an LED in a notification alarm that previously employed a flashtube. The drive circuit for the flashtube is completely different from the trigger circuit for an LED. For example, a flash tube requires kilowatts

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 7 of 28

of energy in a range of 100-2000 volts to operate. An LED requires milliwatts of energy at a significantly lower voltage to operate, thus making it ideal for battery powered apparatuses, such as, the one taught by Markwell. Therefore, the alarm unit using a flashtube taught by Bechtel cannot be meaningfully combined with a battery powered detector unit using an LED as taught by Markwell. It is respectfully submitted that the Examiner cannot merely use hindsight to select various elements known in the art and then combined them to make Appellants' invention obvious. Thus, Appellants' independent claim 1 is not made obvious by the teaching of Bechtel and Markwell.

Furthermore, the Examiner alleged in the Final Office Action that "Bechtel teaches an IC chip specifically use[d] to control the flashtube light and the horn (audible alarm)". The Examiner interprets ASIC as a specific IC chip made for a specific application. Thus, the Examiner then equates that the IC chip selected by Bechtel is an IC chip selected for controlling the flashtube light and the horn, i.e., an ASIC.

The Appellants respectfully submit that the Appellants' claim scope is not so broad that it encompasses all ICs. ASIC is a well known term and does not encompass the scenario where a general purpose off-the-shelf chip is deployed in a system where the selected IC is suddenly then considered to be an ASIC. An ASIC is an IC customized for a particular use, rather than intended for general-purpose use. Thus, Bechtel's IC is a general purpose IC and such use of general purpose ICs teaches away from embodiments that use ASICs.

The Examiner further asserts in the Advisory Action dated April 18, 2006 that one skilled in the art could simply customize an ASIC taught by Markwell to work with the flashtube taught by Bechtel. The Appellants respectfully submit that the Examiner is again using impermissible hindsight. The Appellants direct the Board's attention to the fact that, notably, there is no suggestion in either Bechtel or Markwell to customize an ASIC chip to be used with a flashtube. Consequently, there is no motivation to combine Markwell and Bechtel, where Markwell only discloses a battery operated detector unit having an LED and Bechtel only discloses an alarm system with a flashtube. In other words, the Examiner failed to provide the necessary motivation to combine the two references to make Appellants' invention obvious. As such Markwell fails to bridge the



BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 8 of 28

substantial gap left by Bechtel. Thus, Appellants' independent claim 1 is not made obvious by the teaching of Bechtel and Markwell.

In rejecting claims under 35 U.S.C. §103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. Denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp. 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Appellants respectfully submit that the Examiner failed to provide a prima facie case of obviousness.

Therefore, the Appellants respectfully submit that independent claim 1 is clearly patentable and not obvious over Bechtel in view of Markwell.

## 2. Claim 4

The Examiner has rejected claim 4 under 35 U.S.C. § 103 as being obvious over Bechtel in view of Markwell. Appellants respectfully traverse the rejection.

The Appellants submit that the combination of Bechtel and Markwell, alone or in any permissible combination, does not teach, show, or suggest all of the limitations of independent claim 1. Since Bechtel and Markwell do not render obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 4 is also not rendered obvious since the claim depends directly from claim 1 and recites additional

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 9 of 28

features of the present invention. Thus, claim 4 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that Bechtel and Markwell, alone or in any permissible combination, do not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, further comprising a current limiting circuit, coupled to said ASIC, where said current limiting circuit limits an input current level, as set forth in claim 4. The current limiting circuit prevents overload in the power supply causing the overcurrent protection in a panel to activate, thereby, preventing the alarm units from operating and prevent damage to relay contacts located in the panel. (See Appellants' specification, pg. 4, ll. 18-27.) This aspect of Appellants' invention is not disclosed by the Bechtel and Markwell, alone or in any permissible combination. Thus, the Appellants respectfully submit that claim 4 is patentable under the provisions of 35 U.S.C. §103.

3. Claim 5

The Examiner has rejected claim 5 under 35 U.S.C. § 103 as being obvious over Bechtel in view of Markwell. Appellants respectfully traverse the rejection.

The Appellants submit that the combination of Bechtel and Markwell, alone or in any permissible combination, does not teach, show, or suggest all of the limitations of independent claim 1. Since Bechtel and Markwell do not render obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 5 is also not rendered obvious since the claim depends indirectly from claim 1 and recites additional features of the present invention. Thus, claim 5 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that Bechtel and Markwell, alone or in any permissible combination, do not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, further comprising a current limiting circuit, coupled to said ASIC, where said current limiting circuit limits an input current level, wherein said current limiting circuit continuously senses said input current level, as set forth in claim 5. By continuously sensing said input current level, the current limiting circuit prevents an inrush condition

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 10 of 28

when the alarm unit is initially powered up. (See Appellants' specification, pg. 4, ll. 18-27.) This aspect of Appellants' invention is not disclosed by the Bechtel and Markwell, alone or in any permissible combination. Thus, the Appellants respectfully submit that claim 5 is patentable under the provisions of 35 U.S.C. §103.

4. Claim 7

The Examiner has rejected claim 7 under 35 U.S.C. § 103 as being obvious over Bechtel in view of Markwell. Appellants respectfully traverse the rejection.

The Appellants submit that the combination of Bechtel and Markwell, alone or in any permissible combination, does not teach, show, or suggest all of the limitations of independent claim 1. Since Bechtel and Markwell do not render obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 7 is also not rendered obvious since the claim depends directly from claim 1 and recites additional features of the present invention. Thus, claim 7 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that Bechtel and Markwell, alone or in any permissible combination, do not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, wherein said ASIC is deployed in an eighteen-pin package, as set forth in claim 7. This aspect of Appellants' invention is not disclosed by the Bechtel and Markwell, alone or in any permissible combination. Thus, the Appellants respectfully submit that claim 7 is patentable under the provisions of 35 U.S.C. §103.

5. Claim 8

The Examiner has rejected claim 8 under 35 U.S.C. § 103 as being obvious over Bechtel in view of Markwell. Appellants respectfully traverse the rejection.

The Appellants submit that the combination of Bechtel and Markwell, alone or in any permissible combination, does not teach, show, or suggest all of the limitations of independent claim 1. Since Bechtel and Markwell do not render obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 8 is also not rendered obvious since the claim depends directly from claim 1 and recites additional

BRIEF ON APPEAL  
Serial No. 10/650,484  
Page 11 of 28

features of the present invention. Thus, claim 8 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that Bechtel and Markwell, alone or in any permissible combination, do not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, wherein said ASIC is deployed in a sixteen-pin package, as set forth in claim 8. This aspect of Appellants' invention is not disclosed by the Bechtel and Markwell, alone or in any permissible combination. Thus, the Appellants respectfully submit that claim 8 is patentable under the provisions of 35 U.S.C. §103.

6. Claim 9

The Examiner has rejected claim 9 under 35 U.S.C. § 103 as being obvious over Bechtel in view of Markwell. Appellants respectfully traverse the rejection.

The Appellants submit that the combination of Bechtel and Markwell, alone or in any permissible combination, does not teach, show, or suggest all of the limitations of independent claim 1. Since Bechtel and Markwell do not render obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 9 is also not rendered obvious since the claim depends directly from claim 1 and recites additional features of the present invention. Thus, claim 9 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that Bechtel and Markwell, alone or in any permissible combination, do not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, wherein said ASIC is deployed in an eight-pin package, as set forth in claim 9. This aspect of Appellants' invention is not disclosed by the Bechtel and Markwell, alone or in any permissible combination. Thus, the Appellants respectfully submit that claim 9 is patentable under the provisions of 35 U.S.C. §103.

7. Claim 11

The Examiner has rejected claim 11 under 35 U.S.C. § 103 as being obvious over Bechtel in view of Markwell. Appellants respectfully traverse the rejection.

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 12 of 28

The Appellants submit that the combination of Bechtel and Markwell, alone or in any permissible combination, does not teach, show, or suggest all of the limitations of independent claim 1. Since Bechtel and Markwell do not render obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 11 is also not rendered obvious since the claim depends directly from claim 1 and recites additional features of the present invention. Thus, claim 11 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that Bechtel and Markwell, alone or in any permissible combination, do not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, wherein said ASIC further provides a charge cycle that is greater than 8 kilohertz, as set forth in claim 11. The resulting benefit is a quieter strobe and a boost inductor with lower inductance (i.e. smaller and cheaper). (See Appellants' specification, pg. 24, ll. 8-11.) This aspect of Appellants' invention is not disclosed by the Bechtel and Markwell, alone or in any permissible combination. Thus, the Appellants respectfully submit that claim 11 is patentable under the provisions of 35 U.S.C. §103.

8. Claim 12

The Examiner has rejected claim 12 under 35 U.S.C. § 103 as being obvious over Bechtel in view of Markwell. Appellants respectfully traverse the rejection.

The Appellants submit that the combination of Bechtel and Markwell, alone or in any permissible combination, does not teach, show, or suggest all of the limitations of independent claim 1. Since Bechtel and Markwell do not render obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 12 is also not rendered obvious since the claim depends directly from claim 1 and recites additional features of the present invention. Thus, claim 12 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that Bechtel and Markwell, alone or in any permissible combination, do not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 13 of 28

flashtube, further comprising an audio circuit, coupled to said ASIC, where said audio circuit generates an audio warning signal, as set forth in claim 12. The ASIC controls and regulates the audio circuit for generating audio warnings such as, for example Code 3 audio patterns. (See Appellants' specification, pg. 4, ll. 12-17.) This aspect of Appellants' invention is not disclosed by the Bechtel and Markwell, alone or in any permissible combination. Thus, the Appellants respectfully submit that claim 12 is patentable under the provisions of 35 U.S.C. §103.

9. Claim 13

The Examiner has rejected claim 13 under 35 U.S.C. § 103 as being obvious over Bechtel in view of Markwell. Appellants respectfully traverse the rejection.

The Appellants submit that the combination of Bechtel and Markwell, alone or in any permissible combination, does not teach, show, or suggest all of the limitations of independent claim 1. Since Bechtel and Markwell do not render obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 13 is also not rendered obvious since the claim depends indirectly from claim 1 and recites additional features of the present invention. Thus, claim 13 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that Bechtel and Markwell, alone or in any permissible combination, do not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, wherein said ASIC provides a charge cycle that is greater than 8 kilohertz, and wherein said ASIC selects an audio frequency for said audio warning signal, as set forth in claim 13. The resulting benefit is a quieter strobe and a boost inductor with lower inductance (i.e. smaller and cheaper) and the ability to generate specific audio patterns, such as for example Code 3 audio patterns. (See Appellants' specification, pg. 4, ll. 12-17; pg. 24, ll. 8-11.) This aspect of Appellants' invention is not disclosed by the Bechtel and Markwell, alone or in any permissible combination. Thus, the Appellants respectfully submit that claim 13 is patentable under the provisions of 35 U.S.C. §103.

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 14 of 28

10. Claim 14

The Examiner has rejected claim 14 under 35 U.S.C. § 103 as being obvious over Bechtel in view of Markwell. Appellants respectfully traverse the rejection.

The Appellants submit that the combination of Bechtel and Markwell, alone or in any permissible combination, does not teach, show, or suggest all of the limitations of independent claim 1. Since Bechtel and Markwell do not render obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 14 is also not rendered obvious since the claim depends directly from claim 1 and recites additional features of the present invention. Thus, claim 14 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that Bechtel and Markwell, alone or in any permissible combination, do not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, further comprising a synchronization detection circuit, coupled to said ASIC, where said synchronization detection circuit receives a synchronization signal to trigger said flash, as set forth in claim 14. The ability to trigger the flash based on the synchronization signal allows a plurality of alarm units to be synchronized. This aspect of Appellants' invention is not disclosed by the Bechtel and Markwell, alone or in any permissible combination. Thus, the Appellants respectfully submit that claim 14 is patentable under the provisions of 35 U.S.C. §103.

11. Claim 15

The Examiner has rejected claim 15 under 35 U.S.C. § 103 as being obvious over Bechtel in view of Markwell. Appellants respectfully traverse the rejection.

The Appellants submit that the combination of Bechtel and Markwell, alone or in any permissible combination, does not teach, show, or suggest all of the limitations of independent claim 1. Since Bechtel and Markwell do not render obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 15 is also not rendered obvious since the claim depends directly from claim 1 and recites additional features of the present invention. Thus, claim 15 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 15 of 28

Secondly, the Appellants contend that Bechtel and Markwell, alone or in any permissible combination, do not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, wherein said ASIC provides a transistor drive capability of greater than 7.3 volts, as set forth in claim 15. The high voltage provides greater drive current and results in faster switching times. (See Appellants' specification, pg. 24, ll. 12-18.) This aspect of Appellants' invention is not disclosed by the Bechtel and Markwell, alone or in any permissible combination. Thus, the Appellants respectfully submit that claim 15 is patentable under the provisions of 35 U.S.C. §103.

12. Claim 16

The Examiner has rejected claim 16 under 35 U.S.C. § 103 as being obvious over Bechtel in view of Markwell. Appellants respectfully traverse the rejection.

The teachings of Bechtel and Markwell are discussed above.

The Board's attention is directed to the fact that Bechtel and Markwell (alone or in any permissible combination) fail to teach or suggest an alarm unit that utilizes an application specific integrated circuit (ASIC) for selecting an audio frequency of an audio warning signal as positively claimed by Appellants in independent claim 1, which recites:

16. An alarm unit, comprising:  
an audio circuit for generating an audio warning signal; and  
an application specific integrated circuit (ASIC) coupled to said audio circuit, for triggering said audio warning signal, wherein said ASIC selects an audio frequency for said audio warning signal. (Emphasis Added.)

In one embodiment, the Appellants' invention teaches that an ASIC may be utilized in an alarm unit. Utilizing ASIC has several exemplary advantages over prior alarm units such as allowing the strobe circuit having a flashtube to operate more quietly, being an actively controlled current-limiter, and greater efficiency. (See Appellants' specification, page 1, line 29 to page 3, line 2.)

In contrast, Bechtel fails to teach, show or suggest an alarm unit that utilizes ASIC. Nowhere does Bechtel specify that the integrated circuitry is an ASIC. The Examiner concedes that Bechtel does not teach using an ASIC, as taught by the



BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 16 of 28

Appellants' independent claim 1, in the Final Office action dated January 13, 2006.

(See Final Office Action, para. 2.)

However, then the Examiner alleges that the significant gap left by Bechtel is bridged by the teachings of Markwell. The Appellants respectfully submit that the alleged combination of Bechtel and Markwell completely fails to teach or suggest an ASIC for selecting an audio frequency of an audio warning signal as positively claimed by the Appellants in amended independent claim 16. Namely, Markwell only discloses that the controller means will activate the audible alarm. Bechtel similarly fails to disclose this novel approach. There is absolutely no disclosure that the controller means is capable of selecting an audio frequency of an audio warning signal. The Examiner alleged in the Final Office Action that Bechtel suggested a conventional pizzo horn in the alarm unit. However, the Appellants again direct the Board's attention to the fact that activating an audible alarm does not mean that Bechtel is teaching or suggesting the concept of selecting an audio frequency of an audio warning signal.

Moreover, the Appellants respectfully submit that Bechtel and Markwell cannot be meaningfully combined. Appellants respectfully request the Board to note that a flashtube, as taught by Bechtel, and an LED, as taught by Markwell, is not interchangeable, especially in the context of the alarm unit as taught by Bechtel and the battery operated detector unit as taught by Markwell. In fact, the electrical characteristics and the operational constraints of a flashtube and LED are significantly different. The high voltage that is needed to trigger a flashtube does not exist for an LED. As such, the deployment of an alarm unit having a flashtube is very different than an alarm unit having an LED.

To illustrate, the use of an ASIC allows the strobe circuit to operate at a higher frequency, thereby providing a faster switching speed which, in turn, allows for the use of a smaller inductor. The smaller inductor will allow the strobe circuit to operate more quietly because any magnetostriction caused by the inductor will likely be at an upper threshold of the human hearing response.

In light of the technological differences between a flashtube and an LED, Bechtel teaches away from Markwell because Bechtel discloses an alarm unit using a flashtube, whereas Markwell teaches a battery powered detector unit using an LED. As

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 17 of 28

stated above, a flashtube is not interchangeable with an LED, especially in the context of the alarm unit taught by Bechtel and the battery operated detector unit taught by Markwell. Significant engineering is required to deploy an LED in a notification alarm that previously employed a flashtube. The drive circuit for the flashtube is completely different from the trigger circuit for an LED. For example, a flash tube requires kilowatts of energy in a range of 100-2000 volts to operate. An LED requires milliwatts of energy at a significantly lower voltage to operate, thus making it ideal for battery powered apparatuses, such as, the one taught by Markwell. Therefore, the alarm unit using a flashtube taught by Bechtel cannot be meaningfully combined with a battery powered detector unit using an LED as taught by Markwell. It is respectfully submitted that the Examiner cannot merely use hindsight to select various elements known in the art and then combined them to make Appellants' invention obvious. Thus, Appellants' independent claim 16 is not made obvious by the teaching of Bechtel and Markwell.

Furthermore, the Examiner alleged in the Final Office Action that "Bechtel teaches an IC chip specifically use[d] to control the flashtube light and the horn (audible alarm)". The Examiner interprets ASIC as a specific IC chip made for a specific application. Thus, the Examiner then equates that the IC chip selected by Bechtel is an IC chip selected for controlling the flashtube light and the horn, i.e., an ASIC.

The Appellants respectfully submit that the Appellants' claim scope is not so broad that it encompasses all ICs. ASIC is a well known term and does not encompass the scenario where a general purpose off-the-shelf chip is deployed in a system where the selected IC is suddenly then considered to be an ASIC. An ASIC is an IC customized for a particular use, rather than intended for general-purpose use. Thus, Bechtel's IC is a general purpose IC and such use of general purpose ICs teaches away from embodiments that use ASICs.

The Examiner further asserts in the Advisory Action dated April 18, 2006 that one skilled in the art could simply customize an ASIC taught by Markwell to work with the flashtube taught by Bechtel. The Appellants respectfully submit that the Examiner is again using impermissible hindsight. The Appellants direct the Board's attention to the fact that, notably, there is no suggestion in either Bechtel or Markwell to customize an ASIC chip to be used with a flashtube. Consequently, there is no motivation to combine

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 18 of 28

Markwell and Bechtel, where Markwell only discloses a battery operated detector unit having an LED and Bechtel only discloses an alarm system with a flashtube. In other words, the Examiner failed to provide the necessary motivation to combine the two references to make Appellants' invention obvious. As such Markwell fails to bridge the substantial gap left by Bechtel. Appellants respectfully submit that the Examiner failed to provide a prima facie case of obviousness.

Therefore, the Appellants respectfully submit that independent claim 16 is clearly patentable and not obvious over Bechtel in view of Markwell.

**B. 35 U.S.C. §103(a) – Bechtel in view of Markwell and Preston**

**1. Claim 2**

The Examiner has rejected claim 2 in the Office Action under 35 U.S.C. §103 as being unpatentable over Bechtel in view of Markwell and in further view of Preston. Appellants respectfully traverse the rejection.

The teachings of Bechtel and Markwell are discussed above. Preston teaches a chemical agent monitor and alarm device. A case is used with a hand portable chemical agent detector for continuously monitoring an atmosphere for the presence of predetermined chemical agents. (See Preston, Abstract.)

As stated above with respect to Appellants' independent claim 1, Bechtel and Markwell simply do not teach or suggest the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube. In light of the technological differences between a flashtube and an LED, Bechtel teaches away from Markwell because Bechtel discloses an alarm unit using a flashtube, whereas Markwell teaches a battery powered detector unit using an LED. As stated above, a flashtube is not interchangeable with an LED, especially in the context of the alarm unit taught by Bechtel and the battery operated detector unit taught by Markwell. Significant engineering is required to deploy an LED in a notification alarm that previously employed a flashtube. The drive circuit for the flashtube is completely different from the trigger circuit for an LED. For example, a flash tube requires kilowatts of energy in a range of 100-2000 volts to operate. An LED requires milliwatts of energy at a significantly lower voltage to operate, thus making it ideal for battery powered

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 19 of 28

apparatuses, such as, the one taught by Markwell. Therefore, the alarm unit using a flashtube taught by Bechtel cannot be meaningfully combined with a battery powered detector unit using an LED as taught by Markwell. It is respectfully submitted that the Examiner cannot merely use hindsight to select various elements known in the art and then combined them to make Appellants' invention obvious. The deficiency left by Bechtel and Markwell is not bridged by the teaching of Preston because Preston only teaches a case used with a hand portable chemical agent detector for continuously monitoring an atmosphere for the presence of predetermined chemical agents. (See Preston, Abstract.)

Since Bechtel in view of Markwell and in further view of Preston does not make obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 2 is also not made obvious since the claim depends indirectly from claim 1 and recites additional features of the present invention. Thus, claim 2 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that the combination of Bechtel, Markwell and Preston does not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, further comprising a switch, coupled to said ASIC, where said switch having a plurality of selectable positions representative of a plurality of intensity settings, wherein said flash has an intensity that is in accordance with a selected position of said switch, as set forth in claim 2. The switch allows the alarm to produce a predefined intensity level associated with a particular switch position. (See Appellants' specification, pg. 5, ll. 1-8.) Thus, the Appellants respectfully submit that claim 2 is patentable under the provisions of 35 U.S.C. §103.

## 2. Claim 3

The Examiner has rejected claim 3 in the Office Action under 35 U.S.C. §103 as being unpatentable over Bechtel in view of Markwell and in further view of Preston. Appellants respectfully traverse the rejection.

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 20 of 28

The Appellants submit that Bechtel in view of Markwell and further in view of Preston do not, in any permissible combination, teach, show, or suggest all of the limitations of independent claim 1. Since Bechtel in view of Markwell and further in view of Preston do not make obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 3 is also not made obvious since the claim depends indirectly from claim 1 and recites additional features of the present invention. Thus, claim 3 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that the combination of Bechtel, Markwell and Preston does not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, further comprising a switch, coupled to said ASIC, where said switch having a plurality of selectable positions representative of a plurality of intensity settings, wherein said flash has an intensity that is in accordance with a selected position of said switch, and wherein said plurality of intensity settings comprise four intensity settings, as set forth in claim 3. The four settings can produce intensity ranging widely from 15-110 candelas. (See Appellants' specification, pg. 5, ll. 19-20.) Thus, the Appellants respectfully submit that claim 3 is patentable under the provisions of 35 U.S.C. §103.

**C. 35 U.S.C. §103(a) – Bechtel in view of Markwell and Kataoka**

**1. Claim 6**

The Examiner has rejected claim 6 in the Office Action under 35 U.S.C. §103 as being unpatentable over Bechtel in view of Markwell and in further view of Kataoka. Appellants respectfully traverse the rejection.

The teachings of Bechtel and Markwell are discussed above. Kataoka teaches a flash device with a back-up capacitor voltage supply. A flash device that uses the same battery to supply both a booster circuit and the processing circuit is disclosed. (See Kataoka, Abstract.)

As stated above with respect to Appellants' independent claim 1, Bechtel and Markwell simply do not teach or suggest the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 21 of 28

flashtube. In light of the technological differences between a flashtube and an LED, Bechtel teaches away from Markwell because Bechtel discloses an alarm unit using a flashtube, whereas Markwell teaches a battery powered detector unit using an LED. As stated above, a flashtube is not interchangeable with an LED, especially in the context of the alarm unit taught by Bechtel and the battery operated detector unit taught by Markwell. Significant engineering is required to deploy an LED in a notification alarm that previously employed a flashtube. The drive circuit for the flashtube is completely different from the trigger circuit for an LED. For example, a flash tube requires kilowatts of energy in a range of 100-2000 volts to operate. An LED requires milliwatts of energy at a significantly lower voltage to operate, thus making it ideal for battery powered apparatuses, such as, the one taught by Markwell. Therefore, the alarm unit using a flashtube taught by Bechtel cannot be meaningfully combined with a battery powered detector unit using an LED as taught by Markwell. It is respectfully submitted that the Examiner cannot merely use hindsight to select various elements known in the art and then combined them to make Appellants' invention obvious. The deficiency left by Bechtel and Markwell is not bridged by the teaching of Kataoka because Kataoka only teaches a flash device that uses the same battery to supply both a booster circuit and the processing circuit. (See Kataoka, Abstract.)

Since Bechtel in view of Markwell and in further view of Kataoka does not make obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 6 is also not made obvious since the claim depends indirectly from claim 1 and recites additional features of the present invention. Thus, claim 6 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that the combination of Bechtel, Markwell and Kataoka does not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, further comprising a switch, a DC to DC converter, coupled to said ASIC, where said DC to DC boost converter provides over voltage protection, as set forth in claim 6. In the case that a strobe capacitor does not discharge after a strobe signal is enabled, the DC-DC boost converter is turned off until the strobe capacitor is discharged and prevents an

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 22 of 28

over voltage condition on the strobe capacitor. (See Appellants' specification, pg. 24, ll. 19-23.) Thus, the Appellants respectfully submit that claim 6 is patentable under the provisions of 35 U.S.C. §103.

**D. 35 U.S.C. §103(a) – Bechtel in view of Markwell and Hata**

**1. Claim 10**

The Examiner has rejected claim 10 in the Office Action under 35 U.S.C. §103 as being unpatentable over Bechtel in view of Markwell and in further view of Hata.

Appellants respectfully traverse the rejection.

The teachings of Bechtel and Markwell are discussed above. Hata teaches a lens-fitted photo film unit having IC. A flash circuit controls the main capacitor and the flash discharge tube for effecting the charging operation and the discharging operation. (See Hata, Abstract.)

As stated above with respect to Appellants' independent claim 1, Bechtel and Markwell simply does not teach or suggest the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube. In light of the technological differences between a flashtube and an LED, Bechtel teaches away from Markwell because Bechtel discloses an alarm unit using a flashtube, whereas Markwell teaches a battery powered detector unit using an LED. As stated above, a flashtube is not interchangeable with an LED, especially in the context of the alarm unit taught by Bechtel and the battery operated detector unit taught by Markwell. Significant engineering is required to deploy an LED in a notification alarm that previously employed a flashtube. The drive circuit for the flashtube is completely different from the trigger circuit for an LED. For example, a flash tube requires kilowatts of energy in a range of 100-2000 volts to operate. An LED requires milliwatts of energy at a significantly lower voltage to operate, thus making it ideal for battery powered apparatuses, such as, the one taught by Markwell. Therefore, the alarm unit using a flashtube taught by Bechtel cannot be meaningfully combined with a battery powered detector unit using an LED as taught by Markwell. It is respectfully submitted that the Examiner cannot merely use hindsight to select various elements known in the art and then combined them to make Appellants' invention obvious. The deficiency left by

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 23 of 28

Bechtel and Markwell is not bridged by the teaching of Hata because Hata only teaches a lens-fitted photo film unit having IC. (See Hata, Abstract.)

Since Bechtel in view of Markwell and in further view of Hata does not make obvious the Appellants' invention as recited in Appellants' independent claim 1, dependent claim 10 is also not made obvious since the claim depends indirectly from claim 1 and recites additional features of the present invention. Thus, claim 10 should be deemed patentable for at least the reasons stated above with respect to independent claim 1.

Secondly, the Appellants contend that the combination of Bechtel, Markwell and Hata does not teach the novel concept of an alarm unit that utilizes an application specific integrated circuit (ASIC) for triggering a flash circuit having a flashtube, wherein said flash circuit further comprises a voltage doubler, as set forth in claim 10. The voltage doubler allows the flashtube to produce intensity levels ranging widely from 15-110 candelas and, thereby, eliminating the need for more alarm unit models. (See Appellants' specification, pg. 5, ll. 11-28.) Thus, the Appellants respectfully submit that claim 10 is patentable under the provisions of 35 U.S.C. §103.



BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 24 of 28

### **CONCLUSION**

For the reasons advanced above, Appellants respectfully urge that the rejections of claims 1-16 as being unpatentable under 35 U.S.C. §103 are improper. Reversal of the rejections in this appeal is respectfully requested. If necessary, please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 20-0782/WHLK/043, and please credit any excess fees to the above referenced deposit account.

Respectfully submitted,

August 11, 2006

  
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BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 25 of 28

**CLAIMS APPENDIX**

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1. (Original) An alarm unit, comprising:
  - a flash circuit having a flashtube for generating a flash; and
  - an application specific integrated circuit (ASIC) coupled to said flash circuit, for triggering said flash.
2. (Original) The alarm unit of claim 1, further comprising:
  - a switch, coupled to said ASIC, where said switch having a plurality of selectable positions representative of a plurality of intensity settings, wherein said flash has an intensity that is in accordance with a selected position of said switch.
3. (Original) The alarm unit of claim 2, wherein said plurality of intensity settings comprise four intensity settings.
4. (Original) The alarm unit of claim 1, further comprising:
  - a current limiting circuit, coupled to said ASIC, where said current limiting circuit limits an input current level.
5. (Original) The alarm unit of claim 4, wherein said current limiting circuit continuously senses said input current level.
6. (Original) The alarm unit of claim 1, further comprising:
  - a DC to DC converter, coupled to said ASIC, where said DC to DC boost converter provides over voltage protection.
7. (Original) The alarm unit of claim 1, wherein said ASIC is deployed in an eighteen-pin package.
8. (Original) The alarm unit of claim 1, wherein said ASIC is deployed in a sixteen-pin package.

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 26 of 28

9. (Original) The alarm unit of claim 1, wherein said ASIC is deployed in an eight-pin package.

10. (Original) The alarm unit of claim 1, wherein said flash circuit further comprises a voltage doubler.

11. (Original) The alarm unit of claim 1, wherein said ASIC provides a charge cycle that is greater than 8 kilohertz.

12. (Original) The alarm unit of claim 1, further comprising:  
an audio circuit, coupled to said ASIC, where said audio circuit generates an audio warning signal.

13. (Original) The alarm unit of claim 11, wherein said ASIC selects an audio frequency for said audio warning signal.

14. (Original) The alarm unit of claim 1, further comprising:  
a synchronization detection circuit, coupled to said ASIC, where said synchronization detection circuit receives a synchronization signal to trigger said flash.

15. (Original) The alarm unit of claim 1, wherein said ASIC provides a transistor drive capability of greater than 7.3 volts.

16. (Previously Presented) An alarm unit, comprising:  
an audio circuit for generating an audio warning signal; and  
an application specific integrated circuit (ASIC) coupled to said audio circuit, for triggering said audio warning signal, wherein said ASIC selects an audio frequency for said audio warning signal.

17. (Canceled)

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 27 of 28

**EVIDENCE APPENDIX**

None

BRIEF ON APPEAL  
Serial No. 10/650,464  
Page 28 of 28

**RELATED PROCEEDINGS APPENDIX**

None

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